Frameworks of competence: common or specific?

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Abstract

Examples of what are known as frameworks of skill or competence suggest a range of requirements which might be met by such frameworks, for organisations, individuals and educational institutions. However, there are two opposing tendencies in framework development: towards different, context-specific frameworks and towards common, shared frameworks. The approach to resolving this, suggested here and prefigured in the JISC-funded SPWS project, is to make a clear distinction between the common and specific approaches, focusing agreement onto common frameworks for reference, while allowing divergence between specific frameworks for application and implementation. This may resolve the tension and allow both common and specific frameworks to flourish. Pointers are given for working towards this. Standards in the area need further development. E-learning tools, including e-portfolio systems, need to build in support for this two-component approach to frameworks of competence.

Keywords:
Skill, competence, frameworks, e-learning tools, e-portfolio systems

1 Introduction

The concept of frameworks of skill or competence has appeared in several contexts, serving several purposes. Stepping back from the actual examples, this paper looks at the way that the concept could meaningfully be used, and properly implemented. But to give initial substance to the discussion, a few examples of existing things which are, or might be, called frameworks of skill or competence will be indicated here.

To start with a practical example, this paper takes SFIA, the Skills Framework for the Information Age (http://www.sfia.org.uk/). It is used by several IT companies as a basis for managing many of their staff competences.

A second example is the Web-based personal development planning (PDP) system, LUSID (http://www.lusid.org.uk/) [1]. Amongst other functionality, LUSID offers people the chance to record and analyse their skills, particularly generic transferable skills. To do this, it has a configurable hierarchy of wider and narrower skill definitions. More about the skills framework aspect of LUSID can be found on JISC's e-Learning Framework site entry on the SPWS project (http://www.elframework.org/projects/spws), and related papers, e.g. [2].

A third example, general rather than specific, would be the many examples of sets of educational objectives, learning outcomes, items found in any curriculum or syllabus, or statements of what should be found there, typically within educational institutions. Many other examples of skills or competence frameworks can be found outside the confines of educational institutions.

On the basis of examples such as these, the purpose of this paper is to do as follows.

- To outline the various possible requirements in principle of a competence framework.
- To focus on one key issue: the tension between common and specific frameworks.
- To suggest strategies for resolving this issue and fulfilling the requirements.

Terminology: the terms "skill", "competence" and "competency" have been used in various diverse ways in the literature, and proposals for their definition and interrelationship have often conflicted with each other. While significant

distinctions have been made for specific purposes, within the context of this paper the distinctions are less significant, because the frameworks discussed can be seen as covering all of these concepts at the same time. Thus, no specific or precise definitions are offered or referred to here.

2 Requirements for competence frameworks

The nature of appropriate scenarios of use of such frameworks is largely independent of the exact content of any particular competence framework.

In the corporate domain, the example of SFIA is illustrative. Their web site identifies it as providing "a common reference model for the identification of the skills needed to develop effective Information Systems (IS) making use of Information Communications Technologies (ICT). It is a simple and logical two-dimensional framework consisting of areas of work on one axis and levels of responsibility on the other." (http://www.sfia.org.uk/cgi-bin/wms.pl/296)

Frameworks like SFIA are intended be used "as a skills management tool within organisations that employ IT staff" (http://www.sfia.org.uk/cgi-bin/wms.pl/1002). This use could include playing a role in:

- assessment/assignment/recruitment, external or internal;
- skills gap analysis, and management of the corporate competency profile;
- developing and maintaining a business-oriented ontology.

For more personal use of competence frameworks, the UK definition of PDP (personal development planning) can be usefully referred to: "A structured and supported process undertaken by an individual to reflect upon their own learning, performance and achievement and to plan for their personal, educational and career development." (http://www.qaa.ac.uk/academicinfrastructure/progressFiles/archive/policystatement/). From this definition, possible uses of competence frameworks by individuals can readily be extrapolated, to aid in such purposes as:

- assessment of their own abilities/ skills/ competences/ knowledge;
- comparison with what is required for them to achieve their goals;
- action planning against externally defined competence objectives;
- development of their individual skills and competence, typically through courses of study, relevant experience, mentoring, guidance etc.

Requirements of educational institutions, related to competence frameworks, may include:

- selection of students;
- relating learning materials to learning objectives;
- management of learning outcomes;
- assessment;
- managing the ontology of their educational business.

In the UK, the academic community together, rather than individual institutions, led by the Quality Assurance Agency for Higher Education (QAA), have produced "subject benchmark statements", which "define what can be expected of a graduate in terms of the techniques and skills needed to develop understanding in the subject" (http://www.qaa.ac.uk/academicinfrastructure/benchmark/). Typically, subject benchmark statements include an informal description of the "knowledge, understanding and skills" associated with an academic subject. Ideally, this could be expected to relate to the requirements of potential employers of those graduates, but in practice there is little input from employers.

The existence of subject benchmark statements suggests a requirement that could be fulfilled by competence frameworks. An academic sector could define a reference point against which any particular institution could define the intended outcomes of their educational courses in a way which permitted comparison with other institutions.

Governmental and administrative bodies may also have their own kinds of requirements from frameworks, to support, for example:

- the mobility of learners and workers;
- analysis of labour market intelligence;
- education and training policy and funding.

The European Qualifications Framework (EQF) is interesting to consider in this context.

The EQF documentation [3] states that it "would establish a common reference point – referring to learning outcomes and levels of competence – simplifying communication between providers and learners in education and training." This clearly makes the connection with competence frameworks.

One may consider possible future requirements as well. It seems possible to imagine a general-purpose system for finding people with particular skills or competence, but, among other challenges to implementing such a system, it would require a common framework acting as a reference point for any parties who wish to participate in such a system.

3 Critique

The examples introduced above each have problems which need to be taken into account in any search for ways forward with practical frameworks.

One of the two principal dimensions of the SFIA framework is the level of responsibility. The SFIA levels are:

1. follow
2. assist
3. apply
4. enable
5. ensure, advise
6. initiate, influence
7. set strategy, inspire, mobilise.

These levels are certainly plausible for many skills, and SFIA maps out which levels are considered as relevant to each particular skill. For each level, four areas of responsibility are distinguished: autonomy; influence; complexity; and business skills. Descriptions of each level of these four areas are grouped together. But how universal are these groupings? There seem to be no specific arguments or justification about why they should be taken as universal. If, for example, many individuals, within a certain skill, display level 2 autonomy but level 4 business skills, the clarity of the level distinctions would be compromised.

Considering this together with the EQF invites further questions. There is a key table in the EQF consultation document, with eight levels on one axis and six areas of application on the other: one for knowledge; one for skills, and four for aspects of "personal and professional competence". As applied to skills, which might be expected to have some correspondence with SFIA, the EQF levels are given as follows.

1. Use basic skills to carry out simple tasks.
2. Use skills and key competences to carry out tasks where action is governed by rules defining routines and strategies.
   Select and apply basic methods, tools and materials.
3. Use a range of field-specific skills to carry out tasks and show personal interpretation through selection and adjustment of methods, tools and materials.
   Evaluate different approaches to tasks.
4. Develop strategic approaches to tasks that arise in work or study by applying specialist knowledge and using expert sources of information.
   Evaluate outcomes in terms of strategic approach used.
5. Develop strategic and creative responses in researching solutions to well defined concrete and abstract problems.
   Demonstrate transfer of theoretical and practical knowledge in creating solutions to problems.
6. Demonstrate mastery of methods and tools in a complex and specialised field and demonstrate innovation in terms of methods used.
   Devise and sustain arguments to solve problems.
7. Create a research based diagnosis to problems by integrating knowledge from new or inter-disciplinary fields and make judgements with incomplete or limited information.
   Develop new skills in response to emerging knowledge and techniques.
8. Research, conceive, design, implement and adapt projects that lead to new knowledge and new procedural solutions.

The obvious question is, do these levels map in any way onto the SFIA levels? Unfortunately there appears to be no clear mapping – for instance it is not the case that two of the EQF levels neatly map onto one of the SFIA levels, with the rest corresponding one-to-one.

Such difficulties suggest a preference for avoiding trying to defineuniversal levels in frameworks that are meant to be of widespread applicability. Instead, a more flexible approach to indicating progression of competence would be to allow the definition of pre-requisite competences for any particular competence definition.

On the other hand there is the relative informality of the subject benchmark statements also mentioned above. Whereas one can see SFIA and the EQF proposing too inflexible a structure in terms of levels, they are attempting to provide schemes which can be referenced by anyone to locate a particular competence description. Subject benchmark statements, on the other hand, do not have sufficient structure to provide such a common reference scheme. In practice, this might mean that a system which attempted to use subject benchmarks as a reference would be too complex and difficult to use in practice.

4 The key issue: common v. specific frameworks

Looking back at the list of requirements, and in view of the critique above, one can discern a tension between tendencies pulling in two opposing directions: towards having a different framework for every specific context, and towards having a common, shared framework of competence.

On the one hand, there are many reasons why people need to develop frameworks which are tailored to represent their specific needs. A particular company will have a specific set of competences which are required, along with generic skills, to perform the activities of the business. To an even greater extent, each individual is likely, insofar as he or she is consciously aware of the matter, to have their own list of what they consider or desire as their own competences. In universities and educational institutions teaching a broad range of subjects, there may be a particular motive to emphasise the particular competences which graduates of that particular institution have, distinguishing them from graduates of other institutions.

On the other hand, there are perhaps even more compelling reasons why competence frameworks need to be shared between different bodies, and developed in common.

- The competences developed in educational institutions need to relate to the competences required in employment or subsequent education.
- If individuals are to “plan for their personal, educational and career development”, they need to know in commonly understandable terms what competences may be required, and how and where to acquire them.
- Labour mobility demands that individuals educated or trained in one place should be able to find work in other places. This implies that the competences gained in one context need to be able to be represented meaningfully in other contexts.
- For many professions, either regulatory bodies or professional associations need to know that standards of competence are adhered to.
- Software and systems developed for a shared framework could be much cheaper than for a bespoke framework.

Both extreme positions, corresponding to these two opposing tendencies, appear to be untenable alone. An insistence on a completely common framework would deny the freedom to experiment, and the freedom for views to differ about which competences are necessary for which roles. But a fragmented approach, where every organisation has its own competence framework, would make life very difficult for self-directed lifelong learners with multiple, diverse and complex career paths – corresponding to contemporary expectations in our modern society driven by economic rationality. To fulfil the requirements, there needs to be a judicious blend of common and specific approaches, and this paper continues by considering how this might be done.

5 Strategies for fulfilling the requirements and resolving the central issue

The JISC-funded SPWS project (http://www.elframework.org/projects/spws) grappled with some of these questions about frameworks [4]. We suggested that a suitable

"meta-framework" for these frameworks of skills and competence should:

- focus attempts at agreement on those things on which it was likely to be in people's interests to agree;
- allow people to disagree on the rest: specifically on how best to design courses or programmes intended to result in improvements in people's abilities.

The SPWS meta-framework therefore allows for two interrelated kinds of framework:

- common or shared frameworks, relatively loose, amenable to agreement, for generic, shared competency definitions in any particular domain;
- specific, "operationalised" frameworks, designed more tightly to suit the requirements of a particular body.

For common frameworks of shared skill or competency definitions, SPWS recommended a faceted approach, to avoid excessive fragmentation into an unmanageable number of independent definitions.

The idea of representing relationships between these common, shared competence definitions using Topic Maps standards (see http://www.topicmaps.org/) is attractive. "Topic maps are a new ISO standard for describing knowledge structures and associating them with information resources" [5]. Each competence concept corresponds to a Topic Maps subject, while relationships to do with composition and pre-requisite competence can be represented by Topic Maps associations. The use of Topic Maps goes beyond the SPWS suggestions.

Specific frameworks of competence for specific contexts invite greater detail in their definition. For example, when developing a curriculum or syllabus for an educational programme, it is good practice to go beyond a simple listing of the general topics to be covered, towards detailing the educational objectives, the learning outcomes, and the manner by which the developed competence will be assessed. This, in turn, will enable a more principled approach to devising learning materials suitable for that curriculum.

Establishing a clear division between common and specific frameworks will go at least much of the way towards providing the conceptual, intellectual basis on which such frameworks can be more stably built.

There are several ways in which specific frameworks may relate to a common, shared framework. Any competence in a specific framework may be represented as having a relationship with a competence drawn from a common, shared framework. These are extremely important relationships, which allow people to understand that a competence in one specific framework is intended to be essentially the same competence as represented in a different specific framework. Following on the Topic Maps line of thinking, specific competences in specific contexts could be represented as Topic Maps occurrences of the Topics represented in a shared competence framework topic map.

To further reconcile the opposing tendencies, it is suggested that people should

- restrict the use of levels to specific frameworks, not common ones
- promote dialogue between the users of specific frameworks, to work towards the creation and development of common frameworks as described above.

There will be a substantial challenge in working towards the establishment of actual shared, common competence frameworks. Agencies or organisations need to be found who are prepared to take on the role of maintaining the common frameworks in their respective areas. In the UK, the Sector Skills Councils (see http://www.ssda.org.uk/) are one obvious candidate. At a European level, it is possible that an agency such as CEDEFOP (http://www.cedefop.eu.int/) might act in this way. Consensus on an agreed information model for a competence framework is also essential, and it is hoped that the ideas proposed here can help towards this.

Developing coherent specific competence frameworks may, if anything, be even more challenging than setting out common frameworks. The scale of the task could perhaps be compared with "business process redesign" or "enterprise resource management". For instance, an educational institution might aim to associate all its resources, course information and teaching and learning materials with a competence framework suitable for that institution; and then to relate that to a common framework established for that sector.

There are a number of e-portfolio related technologies that could use such frameworks, and conversely could be used as test beds for their implementation. LUSID, as referred to above, is certainly one such; it may be that the Open Source Portfolio (http://www.osportfolio.org/) could be another one. However, there are many such systems that do not have structures corresponding to a framework of skills or competence. For these systems, software developers could be invited to build their software to support or integrate with competence frameworks as suggested.

6 Conclusions and further work

This paper takes up the key point whose investigation was started in the SPWS project: that a clear distinction needs to be made between the structure of frameworks intended for common agreement, and that of frameworks intended for specific application or implementation. Making the distinction clear allows a constructive relationship between common, agreed frameworks and specific frameworks that are tailored to particular educational or business processes, including assessment.

Standards in the area need further development, beyond the current leading work of IEEE in their "Reusable Competency Definitions" (http://ltsc.ieee.org/wg20/). In particular, standards for competence frameworks need to be developed, to add to the standards for individual definitions.

E-learning tools, and particularly e-portfolio tools, need to build in support for dealing with competence definitions and frameworks. Inevitably this will be difficult before standards are agreed, but a start needs to be made somewhere, and far-sighted software developers are good candidates for helping to get the process moving. Without effective and agreed competence frameworks, the usefulness of putting together evidence for competence within portfolios will be limited to the context in which the evidence was gathered. LUSID, as introduced above, provides a useful initial model of application in the e-portfolio domain.

Enterprise ontologies, or any conceptual basis for enterprise information management, need to include the idea of competence frameworks, and enterprises that use such frameworks need to adopt the dual approach proposed here, so that they have the freedom to tailor their frameworks to their own needs, while at the same time retaining allowing reference to common definitions, thus, for example, making the skills and qualities sought in the recruitment processes open to use by e-portfolio and other tools.

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